

EXHIBIT BB

**TO DECLARATION OF MATTHEW D. BROWN
IN SUPPORT OF FACEBOOK, INC.'S OPPOSITION
TO PLAINTIFFS' MOTION FOR CLASS CERTIFICATION**

[PUBLIC REDACTED VERSION]

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN JOSE DIVISION

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ANGEL FRALEY; PAUL WANG, et)
al.,)
Plaintiffs,)
vs.) No. CV-11-01726LHK
FACEBOOK, INC., a)
corporation; and Does 1-100,)
Defendants.)
_____)

VIDEOTAPED DEPOSITION OF FERNANDO TORRES
WEDNESDAY, APRIL 11, 2012

Reported by: KELLI COMBS, CSR NO. 7705
Job No. SF141744
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<p>1 2 3 4 5 6 7 8 Deposition of FERNANDO TORRES, taken on behalf of 9 Defendants, at THE ARNS LAW FIRM, 515 Folsom Street, 3rd 10 Floor, San Francisco, California, commencing at 10:11 11 a.m., Wednesday, April 11, 2012, before Kelli Combs, CSR 12 7705. 13 14 15 16 17 18 19 20 21 22 23 24 25</p> <p style="text-align: right;">Page 2</p>	<p>1 FERNANDO TORRES, 2 after having been duly sworn, testified as follows: 3 ---o0o--- 4 5 10:03:28 6 THE VIDEOGRAPHER: Good morning. We're on 7 the record at 10:11 a.m., on April 11th, 2012. This 8 is the video recorded deposition of Fernando Torres. 9 My name is Shawn Phillips, here with our court 10 reporter Kelli Combs. We're here from Veritext 10:11:55 11 National Deposition and Litigation Services, at the 12 request for Defendant. 13 This deposition is being held at 515 14 Folsom Street in San Francisco. The caption of this 15 case is Angel Fraley, Paul Wang, et al., v. 10:12:10 16 Facebook, Incorporated, a corporation, and Does 1 17 through 100, case number CV-11-01726LHK. 18 Please note that the audio and video 19 recording will take place unless all parties agree 20 to go off the record. Microphones are sensitive and 10:12:32 21 may pick up whispers, private conversations and 22 cellular interference. 23 At this time, will counsel and all present 24 identify themselves for the record? 25 MR. ARNS: Robert Arns, for Plaintiffs. 10:12:45</p> <p style="text-align: right;">Page 4</p>
<p>1 APPEARANCE OF COUNSEL: 2 3 FOR PLAINTIFFS: 4 THE ARNS LAW FIRM 5 BY: ROBERT S. ARNS, ESQ. 6 KEVIN M. OSBORNE, ESQ. 7 STEVEN WEINMANN, ESQ. 8 515 Folsom Street, 3rd Floor 9 San Francisco, California 94105 10 (415) 495-7800 11 rsa@arnslaw.com 12 kmo@arnslaw.com 13 FOR DEFENDANTS: 14 COOLEY, LLP 15 BY: JEFFREY GUTKIN, ESQ. 16 101 California Street, 5th Floor 17 San Francisco, California 94111 18 (415) 693-2026 19 jgutkin@cooley.com 20 21 Also present: Shawn Phillips, Videographer 22 Sandeep Solanki, In-House Counsel for Facebook 23 24 25</p> <p style="text-align: right;">Page 3</p>	<p>1 MR. OSBORNE: Kevin Osborne, for 10:12:50 2 Plaintiffs. 3 MR. WEINMANN: Steven Weinmann, for 4 Plaintiffs. 5 MR. GUTKIN: This is Jeff Gutkin from the 10:12:54 6 Cooley firm, appearing for Defendant Facebook, 7 Incorporated. 8 MR. SOLANKI: Sandeep Solanki, for 9 Facebook. 10 THE VIDEOGRAPHER: Thank you. 10:13:05 11 The witness will be sworn in and we can 12 proceed. 13 (Deponent sworn.) 14 EXAMINATION 15 BY MR. GUTKIN: 16 Q Good morning, Mr. Torres. 17 A Good morning. 18 Q Again. My name is Jeff, and I'll be 19 asking you some questions today. 20 Have you been deposed before? 10:13:26 21 A Yes, I have. 22 Q How many times? 23 A Four. 24 Q Four times. 25 And were all of those in connection with 10:13:31</p> <p style="text-align: right;">Page 5</p>

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<p>1 THE VIDEOGRAPHER: This marks the 12:57:06 2 beginning of Disk 3 in the deposition of Fernando 3 Torres. The time is 1:42 and we're on the record. 4 BY MR. GUTKIN: 5 Q Mr. Torres, I'd like to just spend some 01:42:40 6 time kind of talking through the formula and the 7 derivation of the formula that you describe in your 8 declaration. 9 Would it be correct to say that the 10 purpose of the formula that you describe is to allow 01:42:55 11 you to compute the portion of Facebook revenue 12 earned from sponsored stories that you believe is 13 attributable to the use of users' names and profile 14 pictures in those stories? 15 A Yes, to calculate what's attributable to 01:43:13 16 the friend endorsement. 17 Q And that's what you refer to as 18 incremental revenue or IR, correct? 19 A Yes. 20 Q And it's the difference between the 01:43:28 21 revenue generated by the sponsored story and the 22 revenue that would have been generated by the 23 hypothetical ad that would have run in its place if 24 Facebook didn't show the sponsored story; is that 25 correct? 01:43:40</p> <p style="text-align: right;">Page 94</p>	<p>1 sponsored stories ads. 01:45:08 2 Q Okay. 3 So let me just break that answer into two 4 pieces. 5 I was saying in my first kind of simplest 01:45:14 6 expression of the formula you're using that it's the 7 actual revenue times one minus F, and you said the 8 actual revenue is equal to the cost per click times 9 the click-through rate? 10 A Yes. 01:45:33 11 Q If I told you this sponsored story ad 12 campaign earned Facebook \$500, you wouldn't need to 13 use the cost per click and click-through rate, 14 right? You could just say it's \$500 times one minus 15 F equals the incremental revenue? 01:45:46 16 A Correct. 17 Q Okay. 18 And then also in your answer, you were 19 just saying that F -- what F reflects is the ratio 20 of the CTR of some comparison ad to the sponsored 01:46:01 21 story, correct? 22 A Yes. 23 Q So it's the click-through rate of the 24 comparison ad divided by the click-through rate of 25 the sponsored story gives you the F value? 01:46:17</p> <p style="text-align: right;">Page 96</p>
<p>1 A Yes. 01:43:42 2 Q And so that incremental revenue would -- 3 should, in your view, be the difference between what 4 Facebook earned from running the sponsored story and 5 what it would have earned if it had not run the 01:43:53 6 sponsored story? 7 A Correct. 8 Q And the formula that you propose to use to 9 calculate the IR is -- we'll start with kind of the 10 simple version and -- to make sure if I'm getting it 01:44:08 11 wrong. 12 You take the actual revenue that Facebook 13 earned from sponsored stories and multiply it by one 14 minus F, correct? 15 A Yes. 01:44:27 16 Q Okay. 17 And it's the -- so it's that actual 18 revenue or AR times one minus F which equals the IR 19 which is equal to the plaintiffs' damages, a class 20 member's damages, I should say. 01:44:45 21 A Yes. So just to be clear, the 22 incremental revenue would be the cost per click 23 times the click-through rate of sponsored stories 24 times one minus the factor that relates 25 click-through rates of standard ads with respect to 01:45:01</p> <p style="text-align: right;">Page 95</p>	<p>1 A Yes. 01:46:19 2 Q Okay. 3 And I think you also said in your report 4 that one minus F represents the fraction of Facebook 5 revenue that's not attributable to conventional ad 01:46:29 6 effectiveness, correct? 7 A Correct. 8 Q Okay. 9 So let's -- we started talking about this 10 earlier, but it's an area that I'm going to have 01:46:39 11 to -- you and I probably will have to talk about for 12 a while. 13 Let's start, first of all, with you 14 explaining to me what is the hypothetical comparison 15 ad and, you know, how will you determine the 01:46:53 16 click-through rate for the ad or ads that you'll 17 need to use for your formula? 18 A Okay. The comparison ads, like in any 19 other hypothetical benchmark that is used to 20 analyze damages, such as in copyright, trademarks, 01:47:24 21 rights of publicity or patents, and intellectual 22 property, in general, would be an ad that is 23 comparable in all the characteristics except the 24 ones that are of interest. 25 Now, those ads are not typically run by 01:47:49</p> <p style="text-align: right;">Page 97</p>

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<p>1 methodology in intellectual property damages 01:54:17</p> <p>2 calculations is to find -- go up in the next level</p> <p>3 of abstraction and find a suitable comparability</p> <p>4 selection of what's the comparable universe to that.</p> <p>5 I think the best example is in patent 01:54:35</p> <p>6 damages calculations. Patents, by definition, have</p> <p>7 to be unique and innovative, so there's no</p> <p>8 unpatented technology that's exactly the same. To</p> <p>9 calculate damages or reasonable royalties, experts</p> <p>10 rely on widening the net of the types of royalty 01:54:55</p> <p>11 rates they look at for comparable transactions,</p> <p>12 comparable licensing agreements, and there's a</p> <p>13 series of comparability criteria that are commonly</p> <p>14 used to establish how wide the universe you're going</p> <p>15 to use as a benchmark to draw the comparison. 01:55:17</p> <p>16 So this F in this methodology would be</p> <p>17 calculated based on those, you know, generally</p> <p>18 accepted methods of deriving a comparison.</p> <p>19 BY MR. GUTKIN:</p> <p>20 Q Okay. 01:55:37</p> <p>21 So looking at that patent example, would</p> <p>22 you ever take all the patents from a particular</p> <p>23 industry, like the automotive industry, and use that</p> <p>24 as the benchmark to value, say, a group of 10,000</p> <p>25 patents all as one -- all at once? 01:55:55</p> <p style="text-align: right;">Page 102</p>	<p>1 it -- of a portfolio of 1800 patents. They were 01:57:52</p> <p>2 subdivided into four groups by the broad</p> <p>3 technology, and this was telecommunications, so</p> <p>4 there were four generations of technology. For</p> <p>5 each of those groups, a royalty rate was -- was -- 01:58:06</p> <p>6 was determined based on comparables in the industry</p> <p>7 for that generation of technology.</p> <p>8 Q And was that in a litigation or was that</p> <p>9 like a valuation consulting work?</p> <p>10 A It was consulting for the IRS. They were 01:58:22</p> <p>11 considering litigation, I suppose, and they needed</p> <p>12 a second opinion as to the value.</p> <p>13 Q Okay.</p> <p>14 That's the value of a patent portfolio?</p> <p>15 A Of a patent portfolio. 01:58:38</p> <p>16 Q So the 1800 patents were broken into four</p> <p>17 separate groups?</p> <p>18 A By -- yes.</p> <p>19 Q In that particular case?</p> <p>20 A Yes. 01:58:47</p> <p>21 Q Now, would you do any analyses that you</p> <p>22 suggest doing in your declaration, would they ever</p> <p>23 disaggregate the analysis at more granularly than</p> <p>24 the campaign level? Such as at the user level?</p> <p>25 A No, I wouldn't -- wouldn't think so. 01:59:13</p> <p style="text-align: right;">Page 104</p>
<p>1 A In that hypothetical question, I think 01:56:06</p> <p>2 the problem is for that particular industry, there</p> <p>3 are different areas of technology, and you wouldn't</p> <p>4 have to go that wide as to benchmark on the</p> <p>5 industry. You can benchmark on electronics or 01:56:20</p> <p>6 electronics applied to -- to consumer durables as</p> <p>7 your benchmark if what you're doing is deriving the</p> <p>8 context for a royalty rate for an electronic</p> <p>9 component for a car.</p> <p>10 So depending on the industry or depending 01:56:44</p> <p>11 on the -- on the market segment one is considering,</p> <p>12 it's the characteristics of the -- of the good, the</p> <p>13 characteristics of the ad that would come into play</p> <p>14 to derive, you know, what would be the proper</p> <p>15 comparable or set of comparables. 01:57:06</p> <p>16 Q So let me ask, sticking with that patent</p> <p>17 in this patent context for a second, let's make the</p> <p>18 industry more specific, like you said, electronics</p> <p>19 parts for use in consumer durables, I think you</p> <p>20 said. 01:57:28</p> <p>21 In your -- have you ever valued a group</p> <p>22 of, say, a thousand patents all in one fell swoop</p> <p>23 using an industry comparison like that?</p> <p>24 A I did a review and I did my own</p> <p>25 calculations for that review -- that's part of 01:57:50</p> <p style="text-align: right;">Page 103</p>	<p>1 There's-- because if you were to try to find the 01:59:16</p> <p>2 proper comparable for a specific friend-endorsed</p> <p>3 ad, you would have to find ads that referred to</p> <p>4 that friend endorsing, right?</p> <p>5 And even in the case of celebrities that 01:59:38</p> <p>6 have a lot of endorsements, you always need to</p> <p>7 place it in -- in -- in context because as you</p> <p>8 narrow the field, you could be getting into an</p> <p>9 agreement that has so many dimensions that are</p> <p>10 outside of just the endorsement that it would be 01:59:56</p> <p>11 very, very hard to derive a reliable value.</p> <p>12 Q So just to first clarify, you are not</p> <p>13 proposing that you would ever go down to the user</p> <p>14 level at its most granular, your method would be at</p> <p>15 the campaign level? 02:00:16</p> <p>16 A For each -- we're not valuing the --</p> <p>17 we're not comparing the click-through rate of a</p> <p>18 friend of a specific individual. It's the</p> <p>19 click-through rate of a campaign, the click-through</p> <p>20 rate of an ad campaign. That ad campaign can be a 02:00:31</p> <p>21 very specific one, one for an advertiser or one for</p> <p>22 an industry or at the whole, you know, U.S. members</p> <p>23 of Facebook level. The click-through rate would</p> <p>24 not be calculated per person, but each person would</p> <p>25 have participated in a series of campaigns as part 02:00:54</p> <p style="text-align: right;">Page 105</p>

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<p>1 of the sponsored stories, so the aggregation of all 02:00:58 2 of those values from all the other ones, from all 3 the appearances would -- would be, you know -- link 4 to a specific member. So each specific member of 5 the class has a number that's associated with them. 02:01:14 6 But it's not that there's an ad that would be a 7 comparable ad to add by X person. 8 Q Okay. 9 Let me just unpack it a little. 10 The F value will not be specific to each 02:01:35 11 user, correct? 12 A No. The F factor is specific to 13 sponsored stories at the level of granularity that 14 is suitable for the data that's produced. 15 Q So the F value could either be one F per 02:01:53 16 sponsored story campaign, one F per appropriate 17 industry subgroup or just one F for all sponsored 18 stories; is that correct? 19 A Yes, as I sit here, that would be one -- 20 you know, the thrust of how this could be 02:02:15 21 implemented in practice. 22 Q Okay. Are there any other -- 23 MR. ARNS: Is that your pen? 24 THE WITNESS: No. 25</p> <p style="text-align: right;">Page 106</p>	<p>1 A And, of course, the definition of an 02:03:47 2 industry could be different -- could be, you 3 know -- could be defined at different levels of 4 generality so, you know, that -- that would depend. 5 Q So -- and just before I move on from this, 02:04:09 6 I want to make sure I have it right. 7 In order to do one F per sponsored story 8 ad campaign, you will need something in the data 9 that tells you for each sponsored story ad campaign 10 what the right comparison ad would be? 02:04:27 11 A Yes. For each impression of the story, 12 we should know or we expect to know who was 13 featured so we can attribute to that person, and 14 the cost per click and the click-through rate of 15 the campaign and information to calculate the 02:04:52 16 proper F, which depends on how it's being 17 produced -- you know, how specific the data is, it 18 would be the campaign, the industry, the type of 19 sponsored story ad, or it could be, you know, the 20 general average F for -- for the whole group. 02:05:16 21 Q Okay. 22 I appreciate that answer. I think maybe I 23 need to ask my last question again, though. 24 In order to do -- to calculate one unique 25 F value per sponsored story campaign, you would need 02:05:35</p> <p style="text-align: right;">Page 108</p>
<p>1 BY MR. GUTKIN: 2 Q Are there any other approaches to 3 computing the F that you, sitting here today, 4 contemplate doing or that you describe anywhere in 5 your declaration? 02:02:39 6 A Excuse me, I didn't -- 7 Q Let me try again. We're talking about a 8 complex subject and I'm not an economist. 9 So in terms of the level of specificity at 10 which F will be computed, are there any other 02:02:56 11 alternatives besides the three I just listed, one F 12 per campaign, one F per appropriate industry 13 subgroup and one F per all Facebook sponsored 14 stories? Are there any other levels of specificity 15 that you contemplate using? 02:03:15 16 A Well, yes. There -- there could be -- it 17 could be different -- the F could be different by 18 the type of sponsored story ad, there being 19 different ways of generating those ads. 20 Q Just to interrupt there, do you mean one F 02:03:32 21 for "Like" sponsored stories, one F for check-in 22 sponsored stories, one F for page-post "Likes"; is 23 that what you meant by that answer? 24 A Yes, it is. 25 Q Okay. Go on. 02:03:44</p> <p style="text-align: right;">Page 107</p>	<p>1 the data to reflect, here is an appropriate 02:05:40 2 comparison ad, that is, you will not be able to hunt 3 for and find an appropriate comparison ad in every 4 case, correct? 5 A Right. There may not be an exact simile 02:05:57 6 of a campaign without the friend endorsement to do 7 a strict comparison. We may have to, you know, use 8 a suitable comparable ad, and that may be at the 9 campaign level, at the industry level or beyond. 10 Q Okay. 02:06:27 11 Now, even if you did it at the campaign 12 level, it's correct, isn't it, that the F you would 13 get would be the average F across all the users who 14 appeared in that campaign, correct? 15 A Yes, that is correct because that's the 02:06:44 16 nature of fair market value. 17 Q So let me just first make sure the answer 18 was yes, correct? 19 A Yes. 20 Q And now, if you would, please explain to 02:06:55 21 me what you mean by "that's the nature of fair 22 market value"? 23 A Because it's the market that -- it's in 24 the market that the value is determined by the 25 interaction of supply and demand, and that price, 02:07:09</p> <p style="text-align: right;">Page 109</p>

<p>1 that's the -- the cost per click reflects that, 02:07:13 2 that interaction. 3 So a specific ad, a specific impression 4 of one ad may not be representative of the market 5 value of that specific ad. 02:07:30 6 Gathering the information for a 7 sufficient number of ads, whether they relate to a 8 campaign or another grouping, allows you to reflect 9 a more representative number for the parameters 10 that we're considering, such as click-through rates 02:07:53 11 and the cost per click. 12 Q Would you agree with me that at the 13 individual user level, there could be users whose 14 endorsement actually has a neutral effect on 15 click-through rate or a negative effect on 02:08:18 16 click-through rate? 17 A Yes, each individual impact on their 18 social network is most likely different, yes. 19 Q Okay. 20 A But that's why we look at the detailed 02:08:38 21 information to -- to -- to calculate those -- you 22 know, the appropriate click-through rates for the 23 group. 24 Q Right. 25 You look at the detailed information to 02:08:50 Page 110</p>	<p>1 a movie might have higher click-through rates than a 02:10:34 2 sponsored story for a airline jet, for example; is 3 that right? 4 A You mean for an airline or for the sale 5 of the jet. 02:10:55 6 Q For the purchase of a jet. 7 A Sure. I mean, those would be two 8 extremely different products. 9 Q Yeah. So maybe that was a bad example, 10 but I was trying to understand what you meant by 02:11:07 11 your last answer, that there are certain products 12 where they're, you know, available for immediate 13 purchase versus other things. 14 A So, for example, in promoting advertising 15 or marketing a movie, a studio -- what they 02:11:23 16 basically need is to get the name of the movie 17 across, get some positive attributes that link to 18 that movie, and the person needs to go out and 19 physically go and see the movie. 20 So that's a totally separate thing. 02:11:40 21 They're not going to go to the movie by clicking on 22 any -- on that particular ad from the studio as 23 opposed to, maybe, applying for a credit card where 24 the link in the sponsored story ad can take you to 25 a landing page that's an application for that 02:12:02 Page 112</p>
<p>1 calculate the appropriate click-through rate for the 02:08:52 2 group, which is sort of -- it's the average of the 3 appropriate click-through rates of each user in the 4 group? 5 A Correct. 02:09:06 6 Q And if you were to aggregate at the 7 industry level, is it correct that the F factor you 8 would determine would be the -- represent the 9 average value of the endorsement of all users who 10 appeared in a sponsored story that was within that 02:09:28 11 industry? 12 A Yes, that would be the goal to have -- to 13 calculate the F that would reflect the market value 14 of the friend endorsement in which they 15 participated. 02:09:52 16 Q Sitting here today, what do you know about 17 the different industry groups that would be 18 appropriate to use? 19 A Well, there are industries that have 20 higher click-through rates because the nature of 02:10:04 21 their ads or the nature of their products lends 22 itself more or less to an immediate reaction by the 23 consumer. You know, that's -- that's the main -- 24 Q Well, so before I ask a follow-up, just to 25 clarify that, so you're saying a sponsored story for 02:10:29 Page 111</p>	<p>1 credit card. 02:12:04 2 Q Okay. 3 Do you know if -- if there can or cannot 4 be multiple types of sponsored stories run within 5 the same campaign? 02:12:17 6 A My recollection from the -- the research 7 that I did is it may be possible to specify it. 8 There is -- there's different ways of defining a 9 campaign, also. So from a marketing or from the 10 advertiser's perspective, they might have a 02:12:44 11 campaign to promote, let's say, a video game. From 12 Facebook advertising's perspective, there may be 13 different campaigns you can set depending on what 14 features of the -- of the product you're featuring, 15 because each campaign can have a different budget, 02:13:02 16 a different cost per click or a different cost per 17 thousand bid, you know. There's different ways of 18 defining it. 19 So there's a campaign as defined within 20 the actual purchase of the advertising product and 02:13:17 21 a campaign from an economic or advertiser's point of 22 view. 23 Q Going back to my question about the 24 industries, have you yet seen any of the data you 25 would need to analyze in order to determine whether 02:13:36 Page 113</p>

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<p>1 millions of people where their endorsement has no 02:43:03</p> <p>2 effect on click-through rate or a negative effect on</p> <p>3 click-through rate, could be; do you agree?</p> <p>4 MR. ARNS: Objection; asked and answered,</p> <p>5 argumentative. 02:43:13</p> <p>6 THE WITNESS: Again, I think there's</p> <p>7 likely to be a percentage. I would not expect it to</p> <p>8 be high, you know, a very high number because that</p> <p>9 would mean that overall, if you take an average, the</p> <p>10 effectiveness of sponsored stories would be low. 02:43:31</p> <p>11 All indications are that the effectiveness</p> <p>12 of sponsored stories ads is high and, in fact,</p> <p>13 that's really the -- one of the main goals of</p> <p>14 advertising through a social network.</p> <p>15 BY MR. GUTKIN:</p> <p>16 Q So it could be, you expect it to be a low</p> <p>17 percentage, and that means what, 10 percent or less?</p> <p>18 Your best estimate.</p> <p>19 MR. ARNS: Object; lack of foundation.</p> <p>20 THE WITNESS: I would agree that 02:44:01</p> <p>21 10 percent or less would be a low percentage.</p> <p>22 BY MR. GUTKIN:</p> <p>23 Q Okay.</p> <p>24 The number of individual people where</p> <p>25 their endorsement has zero or negative effect on 02:44:07</p> <p style="text-align: right;">Page 134</p>	<p>1 show and say and purport that sponsored stories ads 02:46:01</p> <p>2 are more effective than standard ads, sometimes</p> <p>3 two-and-a half times more effective. So if there</p> <p>4 are people who term turn -- who turn potential</p> <p>5 customers away, they're probably very, very few. 02:46:27</p> <p>6 Q In the 5 to 10 percent range?</p> <p>7 MR. OSBORNE: Misstates testimony.</p> <p>8 THE WITNESS: I really think that when we</p> <p>9 see the data, we'll probably see that if we could</p> <p>10 measure that, it would be around there. 02:46:44</p> <p>11 BY MR. GUTKIN:</p> <p>12 Q But let's go one step at a time.</p> <p>13 There's nothing in your declaration that</p> <p>14 shows any way that you will measure the endorsement</p> <p>15 power of users, correct? Individual users? 02:46:55</p> <p>16 A The methodology measures the damages</p> <p>17 based on the fair market value of friend</p> <p>18 endorsements, and it doesn't depend on a -- on an</p> <p>19 evaluation on an ad-by-ad basis, which can't be</p> <p>20 done. 02:47:24</p> <p>21 Q Well, that wasn't my question. It was --</p> <p>22 there's nothing in your methodology, and if there</p> <p>23 is, then point me to it.</p> <p>24 There's nothing in your methodology that</p> <p>25 determines whether any individual user has a 02:47:35</p> <p style="text-align: right;">Page 136</p>
<p>1 click-through rate, you agree it's reasonable to say 02:44:11</p> <p>2 5 to 10 percent?</p> <p>3 A I would expect that number to be within</p> <p>4 that range, probably. I don't have -- it's not the</p> <p>5 subject of what I analyzed, and I haven't seen 02:44:23</p> <p>6 enough information to derive an opinion on that.</p> <p>7 So it's my expectation that, yeah, it could be</p> <p>8 around that number because it's a number that does</p> <p>9 not dominate the whole universe.</p> <p>10 Q Okay. 02:44:41</p> <p>11 How would you test if it's 5 percent,</p> <p>12 10 percent, 15? Is there any part of what you're</p> <p>13 proposing to do that would test for how many</p> <p>14 individual users their effect on click-through rates</p> <p>15 is zero or negative? 02:44:56</p> <p>16 A In -- the methodology considers the fact</p> <p>17 that there's variations in the effectiveness of</p> <p>18 some of the friend endorsements by using averages.</p> <p>19 And averages are the device that are used to negate</p> <p>20 the effect of those outliers. 02:45:28</p> <p>21 My expectation is that this fringe</p> <p>22 hypothetical you're proposing is not going to be</p> <p>23 representative of the situation, because all the</p> <p>24 sampling, all the experiments and Facebook's own</p> <p>25 advertising and declarations in the media, I mean, 02:45:50</p> <p style="text-align: right;">Page 135</p>	<p>1 positive, a zero or a negative effect on 02:47:38</p> <p>2 click-through rates for the sponsored stories they</p> <p>3 appear in; do you agree?</p> <p>4 MR. ARNS: Object; argumentative.</p> <p>5 THE WITNESS: I don't agree in the sense 02:47:50</p> <p>6 that to the extent that phenomenon would impinge on</p> <p>7 the numbers is reflected in the click-through rate</p> <p>8 of the sponsored stories.</p> <p>9 BY MR. GUTKIN:</p> <p>10 Q So you said before that the averages 02:48:03</p> <p>11 negate these outliers. And what you mean by that is</p> <p>12 that when you average together a group of users,</p> <p>13 then these outliers, you can't see them anymore if</p> <p>14 the group results in a higher click-through rate as</p> <p>15 compared to the comparison ad; then that's the 02:48:23</p> <p>16 number you use for everyone in the group, including</p> <p>17 the outliers, correct?</p> <p>18 A Not completely correct. By using the</p> <p>19 averages, you're -- you're ruling out the bias from</p> <p>20 specially ineffective people, and you're also 02:48:43</p> <p>21 ruling out the effect of specially effective</p> <p>22 people. It could be opinion leaders that are</p> <p>23 included in that social network. And it could be,</p> <p>24 you know, social outcasts included in the social</p> <p>25 network. 02:48:59</p> <p style="text-align: right;">Page 137</p>

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1 By using averages, we take away those 02:49:01
 2 distortions, and we talk about -- and we calculate
 3 the effects for the typical user, but by using
 4 averages, we don't distort the overall number.
 5 **Q I appreciate that answer and that 02:49:16**
 6 **clarification.**
 7 **So the average, it takes away -- it both**
 8 **removes from the number that you calculate the**
 9 **effect of the individuals who had a zero or negative**
 10 **effect on click-through rate and it decreases the 02:49:34**
 11 **measured effect of the strong endorsers, correct?**
 12 **A Correct.**
 13 **Q Okay.**
 14 **And when you do the damages calculation to**
 15 **determine what kind of check each user gets, their 02:49:52**
 16 **check is based on the average for whatever group**
 17 **they are put into, correct?**
 18 **A Well, their individual attribution of**
 19 **damages, of their effect will depend on the**
 20 **specific ads that they have appeared on. The 02:50:16**
 21 **effectiveness of those ads will have been**
 22 **calculated based on averages, and the effectiveness**
 23 **of ads in general will have been calculated by a**
 24 **more general average. So it's a combination of**
 25 **averages and the specific ads in which they appear. 02:50:28**
 Page 138

1 MR. ARNS: As soon as you come to a 02:50:32
 2 stopping point.
 3 MR. GUTKIN: Sure. Maybe just one more.
 4 BY MR. GUTKIN:
 5 **Q I appreciate that clarification. 02:50:35**
 6 **The amount of a user's check will depend**
 7 **on, for example, how many sponsored stories they**
 8 **appeared in and how much revenue Facebook earned for**
 9 **that sponsored story, but the amount will be higher**
 10 **or lower based on the average F computed for 02:50:52**
 11 **whatever group that user is put into, correct?**
 12 **A It would depend in part on the F.**
 13 **Q In part on the F and in part on how many**
 14 **sponsored stories they appeared in and how much**
 15 **revenue Facebook received, correct? 02:51:09**
 16 **A For those ads, for those specific ads,**
 17 **yes.**
 18 **MR. GUTKIN: Okay. Why don't we take a**
 19 **break.**
 20 **THE VIDEOGRAPHER: The time is 2:51 and we 02:51:17**
 21 **are off the record. This marks the end of Disk**
 22 **Number 3 in the deposition of Fernando Torres.**
 23 **(Recess taken.)**
 24 **THE VIDEOGRAPHER: The time is 3:13 and we**
 25 **are on the record. This marks the beginning of 03:12:55**
 Page 139

1 Disk 4 in the deposition of Fernando Torres. 03:12:58
 2 BY MR. GUTKIN:
 3 **Q Let's talk about CPC or cost per click.**
 4 **Your damages equation uses cost -- the cost per**
 5 **click of a sponsored story to compute the actual 03:13:21**
 6 **revenue generated by that sponsored story, correct?**
 7 **A Yes.**
 8 **Q You do not use the cost per click of any**
 9 **comparison ad in your calculation of F or otherwise;**
 10 **is that correct? 03:13:45**
 11 **A Correct.**
 12 **Q And that's because you are assuming that**
 13 **the cost per click for the sponsored story and the**
 14 **cost per click for the hypothetical ad that you're**
 15 **comparing it to are the same? 03:13:58**
 16 **A No. In reality, it's because we know the**
 17 **cost per click in the sponsored stories ads because**
 18 **that's data that's recorded. We don't know what**
 19 **would have been the cost per click in standard ads.**
 20 **Q And why do you -- 03:14:22**
 21 **Why do you think it's a safe or reasonable**
 22 **assumption to treat them as the same?**
 23 **A Because in the comparisons that I saw**
 24 **made internally by Facebook, the bids are the same,**
 25 **so the advertiser bids are the same maximum. In 03:14:40**
 Page 140

1 practice, it depends on exactly the competition for 03:14:49
 2 that ad and other characteristics that go through
 3 the pricing as to what the cost per click will be,
 4 but the -- in general, there would be reasons why
 5 cost per clicks would be bid up if sponsored story 03:15:08
 6 ads are more effective.
 7 So a more conservative assumption is that
 8 the differences are not due to the cost per click
 9 itself; the differences are because some ads are
 10 friend sponsored, friend endorsed and some ads are 03:15:30
 11 not.
 12 **Q Again, we'll just kind of want to break it**
 13 **down and take it one piece at a time.**
 14 [REDACTED]
 15 [REDACTED]
 16 [REDACTED]
 17 [REDACTED]
 18 [REDACTED]
 19 [REDACTED]
 20 [REDACTED]
 21 [REDACTED]
 22 [REDACTED]
 23 [REDACTED]
 24 [REDACTED]
 25 [REDACTED] 03:16:25
 Page 141

Pages 138 to 141

<p>1 what industry they're in, or would you just assign 05:00:00</p> <p>2 it to the industry of all individuals who purchased</p> <p>3 a sponsored story?</p> <p>4 MR. OSBORNE: It's an incomplete</p> <p>5 hypothetical and it's vague. 05:00:10</p> <p>6 THE WITNESS: So in that hypothetical,</p> <p>7 there would be -- as in the case of an individual,</p> <p>8 there would be a series of advertisers associated</p> <p>9 with these ads that cannot be classified, and</p> <p>10 they -- I mean, in the same fashion that in the 05:00:34</p> <p>11 national accounts there is -- in the classification</p> <p>12 of industries, there is always a category for not</p> <p>13 elsewhere classified, so it would be an NEC for</p> <p>14 sure.</p> <p>15 BY MR. GUTKIN: 05:00:51</p> <p>16 Q So sort of every sponsored story that you</p> <p>17 couldn't fit into an industry would go into the pool</p> <p>18 of not otherwise -- not eligible for classification,</p> <p>19 is that what --</p> <p>20 A Not elsewhere. 05:01:05</p> <p>21 Q I'm sorry.</p> <p>22 Every sponsored story that you can't put</p> <p>23 into an industry would be grouped together in the</p> <p>24 not elsewhere classified pool?</p> <p>25 MR. OSBORNE: Same objections. 05:01:15</p> <p style="text-align: right;">Page 198</p>	<p>1 Q Okay. 05:02:15</p> <p>2 I take it that if the name of a particular</p> <p>3 sponsor is an unfamiliar name, like John Smith, you</p> <p>4 don't know whether John Smith is a maker of shoes or</p> <p>5 an individual just running a sponsored story for 05:02:34</p> <p>6 their plant grooming business. I mean, it could be</p> <p>7 anything. So I take it that a lot of such sponsors</p> <p>8 would fall into the not elsewhere classified</p> <p>9 category.</p> <p>10 Do you agree? 05:02:49</p> <p>11 MR. OSBORNE: It's an incomplete</p> <p>12 hypothetical, it's compound, and it lacks</p> <p>13 foundation.</p> <p>14 THE WITNESS: I agree that in that</p> <p>15 situation that would be a challenge. Now, there 05:02:56</p> <p>16 could be other circumstances in other hypothetical</p> <p>17 situations where Facebook analytics has other</p> <p>18 sources of information that allow them to classify</p> <p>19 advertisers because when they set up the account,</p> <p>20 they can get more information. 05:03:20</p> <p>21 BY MR. GUTKIN:</p> <p>22 Q But you're not -- don't know sitting here</p> <p>23 today, one way or the other, whether that data is</p> <p>24 available?</p> <p>25 A I don't know for certain, no. 05:03:31</p> <p style="text-align: right;">Page 200</p>
<p>1 THE WITNESS: That would be one way of 05:01:16</p> <p>2 doing it, yes.</p> <p>3 BY MR. GUTKIN:</p> <p>4 Q Are there any other ways, sitting here</p> <p>5 today, that you would be able to do it? 05:01:20</p> <p>6 MR. OSBORNE: Same objections.</p> <p>7 THE WITNESS: I don't think so.</p> <p>8 BY MR. GUTKIN:</p> <p>9 Q Okay.</p> <p>10 This issue that we've talked about a bit 05:01:30</p> <p>11 of at what level you will do individualized</p> <p>12 calculations of F or aggregated calculations of F,</p> <p>13 is that described anywhere in your declaration that</p> <p>14 you might do it by industry or you might do it</p> <p>15 overall for all of Facebook's sponsored stories? 05:01:46</p> <p>16 A No. The methodology set out in the</p> <p>17 declaration is on a general basis.</p> <p>18 Q So you don't say anywhere whether it could</p> <p>19 be all -- one F for all of sponsored stories, or 20</p> <p>20 different Fs for the 20 industries, or far more at a 05:02:02</p> <p>21 more disaggregated level in the declaration,</p> <p>22 correct?</p> <p>23 A Correct. The methodology is general</p> <p>24 enough to be applicable for any of those</p> <p>25 subclassifications. 05:02:15</p> <p style="text-align: right;">Page 199</p>	<p>1 Q And you haven't seen any of that data 05:03:33</p> <p>2 sitting here today?</p> <p>3 A No, I haven't seen that data from</p> <p>4 Facebook, no.</p> <p>5 Q Okay. 05:03:47</p> <p>6 Let's say that you --</p> <p>7 Well, do you know how many different</p> <p>8 sponsored story sponsors there are, whether it's</p> <p>9 20,000, 80,000, 400,000?</p> <p>10 Do you know? 05:04:09</p> <p>11 A If you would clarify what "sponsors"</p> <p>12 would be.</p> <p>13 Q Sure.</p> <p>14 Different purchasers of sponsored stories.</p> <p>15 Do you know how many unique purchasers of sponsored 05:04:18</p> <p>16 stories there are?</p> <p>17 A I don't know the exact number of</p> <p>18 advertisers that use the sponsored stories ad</p> <p>19 product.</p> <p>20 Q Could be 20,000? Could be 400,000? 05:04:28</p> <p>21 A Could be.</p> <p>22 Q Okay.</p> <p>23 Let's just pick a number in the middle and</p> <p>24 say it's 200,000.</p> <p>25 Would it be your proposal that someone 05:04:40</p> <p style="text-align: right;">Page 201</p>

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<p>1 sits down and eyeballs each name on the list of 05:04:42 2 200,000 for assignment to an industry, where 3 possible? 4 A In that hypothetical, no. 5 Q How would it be done? 05:04:54 6 A In that hypothetical situation, I would 7 ask a programmer to generate a program that looks 8 up the names or the entities listed on that 9 database and cross-reference them to other 10 databases that may be publicly available for that 05:05:21 11 situation to try to identify the industry. 12 So, for example, you know, just -- it's 13 not something that a person would have to sit down 14 and look at every name and just imagine what 15 industry. There are systematic ways of doing it. 05:05:43 16 Q So that's, frankly, kind of a creative 17 idea, but are you aware that it's possible to write 18 a program that just takes a list of names and 19 Googles them or uses some other method of trying to 20 assign each to an industry? Are you aware whether 05:06:01 21 such a program exists? 22 MR. ARNS: Object; compound, 23 argumentative. 24 THE WITNESS: I did not say that that 25 specific program exists. In the hypothetical you 05:06:12 Page 202</p>	<p>1 would do this with a list of 200,000 sponsor names? 05:07:51 2 A My basis is my experience. The number of 3 sponsored names doesn't matter. 4 Q Your experience in software usage? 5 What experience informs your belief that 05:08:12 6 this is possible? 7 A My experience in economics; my experience 8 as a -- as an administrator of companies; my 9 experience as a software developer before; and 10 my -- the information I gather, my -- my experience 05:08:36 11 from being very familiar with the technology 12 industry. 13 Q Have you ever seen such a program? 14 A That specific program? I've seen 15 something very similar. 05:08:54 16 Q What was that? 17 A And I use it very often. The -- for 18 intellectual property disputes and for 19 negotiations, we often need to refer to comparable 20 royalty rates and contract terms and licensing 05:09:09 21 transactions. So there are several providers that 22 actually feed off of the EDGAR database 23 registrations and pull the licensing contracts that 24 come up in SEC disclosures of companies. They 25 gather that information, and they classify it so we 05:09:30 Page 204</p>
<p>1 were posing, that's what I would do. I would ask a 05:06:15 2 programmer to devise a program. I'm not saying that 3 I know that it's going to be Python script or some 4 other application of Java. It doesn't matter. In 5 that situation there is information accessible that 05:06:30 6 can lead to that classification. And for example, 7 some -- some of the advertisers on that list that 8 could be detected by the program running down the 9 list could be publicly traded companies. Now, 10 publicly traded companies list their North American 05:06:55 11 industry classification numbers in their disclosures 12 to the SEC, and that's publicly available through 13 the EDGAR database. So yes, a software program 14 could be written to run down the list, identify 15 publicly traded companies, go to EDGAR, pull out the 05:07:18 16 information for the NAIC codes and classify them, 17 you know, introduce the code into this database. 18 And I'm sure all of the ones that are not publicly 19 traded, it would be very difficult to get the proper 20 information. But that is one way of doing it in 05:07:37 21 that hypothetical. 22 BY MR. GUTKIN: 23 Q So I understand the description of the 24 program conceptually, what's your basis for saying 25 that it's possible to write such a program that 05:07:48 Page 203</p>	<p>1 can use it in a database to search for those 05:09:32 2 royalty rates. And they do this with a two-person 3 firm, neither of whom are -- are -- are software 4 developers or are not looking at each contract. 5 There is a way to systematically do that. 05:09:48 6 Q Okay. 7 For the actual execution on your 8 methodology, is it still, in your mind, the three 9 possibilities of generating an F for each individual 10 campaign, generate an F for each industry, or 05:10:09 11 generate an overall F for all sponsored stories, or 12 over the course of the day, I mean, have you -- I'm 13 just not sure. 14 Have you ruled out the possibility of 15 generating an F for each individual campaign, or are 05:10:22 16 you still thinking you may do that? 17 A In the course of the day, I haven't ruled 18 out any specific possibility. There is also the 19 classification of an F by type of sponsored story 20 ad, depending on the way it's produced. 05:10:40 21 Q So all of those are still on the table? 22 A Yes, they're all possibilities to 23 calculate the proper -- 24 Q Can you say -- 25 Based on the data you have seen so far, 05:10:53 Page 205</p>

Pages 202 to 205

1 record. 05:42:01
 2 [REDACTED]
 3 [REDACTED]
 4 [REDACTED]
 5 [REDACTED]
 6 [REDACTED]
 7 [REDACTED]
 8 [REDACTED]
 9 Q Okay.
 10 And so again, you have said reasons that 05:42:21
 11 Facebook expected the sponsored story click-through
 12 rate to be higher and the reasons that you think it
 13 ought to be higher because it involves a friend
 14 [REDACTED]
 15 [REDACTED]
 16 [REDACTED]
 17 [REDACTED]
 18 [REDACTED]
 19 [REDACTED]
 20 [REDACTED]
 21 [REDACTED]
 22 Q For the sponsored story?
 23 A For the sponsored story ads that they
 24 tested, correct.
 25 Q Okay. 05:43:00
 Page 226

1 And you haven't done any analysis of the 05:43:01
 2 overall data, any data outside of this small group
 3 of documents, to know whether, in general, the
 4 click-through rates are higher or lower for
 5 sponsored stories versus comparable ads of other 05:43:12
 6 kinds.
 7 Do you agree?
 8 MR. OSBORNE: It's asked and answered.
 9 THE WITNESS: In developing the
 10 declaration and the methodology, there was no data 05:43:22
 11 to be used to analyze, so that -- you know, that's
 12 not something that needed or had to or could have
 13 been done.
 14 BY MR. GUTKIN:
 15 Q And if you blended this Glory of Rome 05:43:39
 16 video game sponsored story with, let's say, an F
 17 calculated for all sponsored stories in the video
 18 game industry, you would actually obscure the fact
 19 that an individual instance, the sponsored story had
 20 a lower click-through rate than the comparison ad. 05:44:00
 21 Do you agree?
 22 MR. OSBORNE: It's vague as to "obscure."
 23 MR. GUTKIN: Hide.
 24 MR. OSBORNE: It's vague.
 25 THE WITNESS: In the -- in that 05:44:11
 Page 227

1 hypothetical situation in deriving an average F for 05:44:12
 2 an industry such as the gaming, software-based
 3 games, averaging would be eliminating the bias of
 4 outliers, such as this one, and high performers,
 5 such as other situations that may arise. So that's 05:44:35
 6 why we would have used averages.
 7 BY MR. GUTKIN:
 8 Q You use averages to eliminate data such as
 9 this that shows there are outliers where sponsored
 10 stories actually have a lower click-through rate 05:44:50
 11 than equivalent comparison ads?
 12 A We use averages to eliminate the
 13 distortions from small samples in an analysis of
 14 the whole.
 15 Q But you don't have any basis to say this 05:45:06
 16 is a small sample, right?
 17 You have only looked at three or four
 18 comparisons, and this is one of them, and you
 19 haven't looked at the overall data. You have no
 20 basis to say that this is some sort of small sample, 05:45:16
 21 do you?
 22 A I do have a basis.
 23 MR. OSBORNE: Argumentative.
 24 BY MR. GUTKIN:
 25 Q What's your basis? 05:45:27
 Page 228

1 A I do have a basis. 05:45:28
 2 Q Go ahead.
 3 [REDACTED]
 4 [REDACTED]
 5 [REDACTED] 05:45:40
 6 Q I'm not here to answer questions, but go
 7 on.
 8 A I mean, do you see where I'm --
 9 Q I do. I see you're at the bottom of
 10 page 1 of Exhibit 583. 05:45:51
 11 [REDACTED]
 12 [REDACTED]
 13 Q So it's because --
 14 A So there is a basis to expect that. If
 15 you run an experiment with a wide enough sample, 05:46:09
 16 you are more likely to get a higher click-through
 17 rate.
 18 [REDACTED]
 19 [REDACTED]
 20 [REDACTED]
 21 [REDACTED]
 22 [REDACTED]
 23 [REDACTED]
 24 [REDACTED]
 25 Q I'm sorry. 2.6. 05:46:39
 Page 229

Pages 226 to 229

<p>1 would be able to provide the proper methodology. 06:19:13</p> <p>2 Q Do you understand that plaintiffs have</p> <p>3 engaged such an expert, or do you not know one way</p> <p>4 or the other?</p> <p>5 A My understanding is that there is a 06:19:24</p> <p>6 statistician engaged as well.</p> <p>7 Q So we've been talking all day about the</p> <p>8 different ways you might be computing F. This is</p> <p>9 another one that you might use some sampling done by</p> <p>10 a statistician and use that to compute F? 06:19:42</p> <p>11 A Correct.</p> <p>12 Q Okay.</p> <p>13 Would you be the one who specifies, I need</p> <p>14 a different F for every industry, or would you just</p> <p>15 say, you know, whatever you think makes sense is 06:19:59</p> <p>16 fine, and I'll use -- it will be my formula, but</p> <p>17 you'll be the one who says you're going to have to</p> <p>18 compute six different Fs or 10 different Fs or 50</p> <p>19 different Fs or one F?</p> <p>20 MR. OSBORNE: Assumes facts, calls for a 06:20:16</p> <p>21 legal conclusion.</p> <p>22 THE WITNESS: So if I have to conclude as</p> <p>23 to how the methodology would be applied, it would be</p> <p>24 in conjunction with probably the -- a statistical</p> <p>25 expert to devise the statistical methods that would 06:20:39</p> <p style="text-align: right;">Page 242</p>	<p>1 you will do sampling or not; is that correct? 06:21:53</p> <p>2 A That's correct.</p> <p>3 Q Okay.</p> <p>4 Are you familiar with the term</p> <p>5 "homophily"? 06:22:07</p> <p>6 A Homophily, yes.</p> <p>7 Q How is it pronounced?</p> <p>8 A I'm not an expert in linguistics.</p> <p>9 Q Okay.</p> <p>10 I figured it might be a term you encounter 06:22:20</p> <p>11 with some regularity, unlike myself.</p> <p>12 It's H-O-M-O-P-H-I-L-Y.</p> <p>13 A Correct.</p> <p>14 Q I'll just say it as -- I'll pronounce it</p> <p>15 as homophily, even if someone who hears this 06:22:54</p> <p>16 videotape may think that I'm embarrassingly mangling</p> <p>17 the word.</p> <p>18 What does that term mean?</p> <p>19 A That's a term that arises in connection</p> <p>20 with the analysis of social networks or networks in 06:23:04</p> <p>21 general, but it's very applicable in social</p> <p>22 networks and economic networks, and that's why I</p> <p>23 know of it. So in my understanding, it's a</p> <p>24 characteristic of social organizations, that people</p> <p>25 tend to group themselves with people that share 06:23:23</p> <p style="text-align: right;">Page 244</p>
<p>1 produce a result that makes sense for the 06:20:46</p> <p>2 methodology to be applied.</p> <p>3 There will be a process of analyzing the</p> <p>4 data first to see what information is available, and</p> <p>5 then discussing how best to and most reliably to use 06:21:03</p> <p>6 that data. The proper methods would be set out and</p> <p>7 the calculations would be done.</p> <p>8 BY MR. GUTKIN:</p> <p>9 Q That discussion and that analysis have not</p> <p>10 been done yet, correct? 06:21:16</p> <p>11 A Correct.</p> <p>12 Q Is it your understanding that it's</p> <p>13 Dr. Drogan who is the statistical expert, or do you</p> <p>14 not actually know?</p> <p>15 A I understand Dr. Drogan is one of the 06:21:27</p> <p>16 experts in the case.</p> <p>17 Q Okay.</p> <p>18 But you don't --</p> <p>19 I'm just trying to understand, do you know</p> <p>20 one way or the other if he's the person you would 06:21:37</p> <p>21 work with if you do sampling, or you don't know?</p> <p>22 A It's my expectation that I would work</p> <p>23 with him if that were the situation, yes.</p> <p>24 Q Okay.</p> <p>25 And -- but you haven't yet determined if 06:21:50</p> <p style="text-align: right;">Page 243</p>	<p>1 characteristics. So, for example, some cities, 06:23:28</p> <p>2 cities tend to be segregated by race or income</p> <p>3 levels. So people gather -- I guess the briefest</p> <p>4 description is that the birds of a feather flock</p> <p>5 together. 06:23:50</p> <p>6 Q Okay.</p> <p>7 Are you aware of the effect of homophily</p> <p>8 in social networks that would suggest people who</p> <p>9 choose to be friends on Facebook tend to have</p> <p>10 similar interests? 06:24:04</p> <p>11 A Yes. That is one dimension of social</p> <p>12 networks.</p> <p>13 Q Okay.</p> <p>14 Have you ever read literature suggesting</p> <p>15 that's true, or is that something you're aware of or 06:24:19</p> <p>16 not aware of?</p> <p>17 A I've read literature on the theoretical</p> <p>18 aspects of the analysis of networks, graph theory</p> <p>19 and social networks and practical applications and</p> <p>20 studies of social networks. So that is one 06:24:36</p> <p>21 characteristic I will be familiar with.</p> <p>22 Q Okay.</p> <p>23 To your knowledge, can Facebook -- can</p> <p>24 Facebook ads be targeted to the friends of people</p> <p>25 who have "Liked" the advertiser's content? 06:24:58</p> <p style="text-align: right;">Page 245</p>

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<p>1 A I understand that that is -- that is one 06:25:12</p> <p>2 way -- it's one way of targeting ads within</p> <p>3 Facebook.</p> <p>4 Q It's called Like Friends of Connections.</p> <p>5 Are you familiar with that? 06:25:22</p> <p>6 A I'm not familiar with that term --</p> <p>7 Q Okay.</p> <p>8 A -- per se.</p> <p>9 Q But you're aware that that is an option</p> <p>10 for targeting Facebook ads? 06:25:30</p> <p>11 A I would expect that that is one way of</p> <p>12 contracting for ads. I'm not 100 percent sure</p> <p>13 that, you know, right now there is that option.</p> <p>14 Q Okay.</p> <p>15 I'll just ask you to assume hypothetically 06:25:48</p> <p>16 that is an option.</p> <p>17 Would you expect that ads, Facebook ads</p> <p>18 that are targeted to the friends of people who have</p> <p>19 "Liked" an advertiser's content, would have a higher</p> <p>20 CTR than Facebook ads that are not so targeted? 06:26:06</p> <p>21 A Yes, I would expect that would be the</p> <p>22 case.</p> <p>23 Q And that's because of the homophily</p> <p>24 effect; that is, people who have "Liked" motorcycles</p> <p>25 would tend to have Facebook friends who are also 06:26:31</p> <p style="text-align: right;">Page 246</p>	<p>1 Is it your understanding that the 06:28:04</p> <p>2 targeting of ads to the friends of people who have</p> <p>3 "Liked" an advertiser's content is in any way</p> <p>4 challenged in this lawsuit, or do you not know one</p> <p>5 way or the other? 06:28:16</p> <p>6 A Is it my understanding targeting ads is a</p> <p>7 subject -- is -- is part of the complaint?</p> <p>8 Q Yes.</p> <p>9 A I don't think targeting itself is part of</p> <p>10 the complaint, in my understanding. 06:28:33</p> <p>11 Q So would you agree that a comparison of a</p> <p>12 sponsored story that is targeted to the friends of</p> <p>13 people who have already "Liked" an advertiser's</p> <p>14 content includes a CTR boost simply related to the</p> <p>15 targeting and the homophily effect? 06:28:58</p> <p>16 MR. OSBORNE: Objection; compound.</p> <p>17 THE WITNESS: No, I wouldn't agree with</p> <p>18 that. I think homophily is a characteristic that</p> <p>19 certain networks exhibit. That's from a technical</p> <p>20 point of view of the theory of networks. That's one 06:29:21</p> <p>21 of the underlying causes of the increased</p> <p>22 effectiveness of sponsored story ads. It's one</p> <p>23 aspect. It's not -- it's not sufficient, but it's</p> <p>24 an underlying cause. It's not the direct cause.</p> <p style="text-align: right;">Page 248</p>
<p>1 interested in motorcycles, so they would be more 06:26:33</p> <p>2 likely to click on an ad for motorcycles?</p> <p>3 A Correct. That's not to mean that all of</p> <p>4 their friends would be motorcycles enthusiasts, but</p> <p>5 there would be a higher proportion of that type of 06:26:47</p> <p>6 person in that person's social network.</p> <p>7 Q What's the widest audience that a</p> <p>8 sponsored story can be shown to?</p> <p>9 A From what I recall from the description</p> <p>10 of sponsored story ads, I think it would be friends 06:27:06</p> <p>11 of the person who appears as the endorser --</p> <p>12 Q Okay.</p> <p>13 A -- on the friends.</p> <p>14 Q Have you done anything at all to quantify</p> <p>15 the homophily effect that occurs to increase the 06:27:25</p> <p>16 click-through rates of sponsored stories?</p> <p>17 MR. OSBORNE: Lacks foundation, assumes</p> <p>18 facts.</p> <p>19 THE WITNESS: Since I haven't analyzed all</p> <p>20 the data produced in connection with sponsored 06:27:46</p> <p>21 stories, I haven't done that type of study. The</p> <p>22 homophily effect is one of the reasons why sponsored</p> <p>23 story ads would be expected to be more effective.</p> <p>24 BY MR. GUTKIN:</p> <p>25 Q Okay. 06:28:03</p> <p style="text-align: right;">Page 247</p>	<p>1 BY MR. GUTKIN: 06:29:53</p> <p>2 Q Okay.</p> <p>3 I think that my last question was poorly</p> <p>4 phrased.</p> <p>5 Do you agree that if you were to compare a 06:29:57</p> <p>6 sponsored story, which can only be targeted at the</p> <p>7 friends of people who have already connected with</p> <p>8 the advertiser's content in some way, if you were to</p> <p>9 compare that to a Facebook ad that could actually be</p> <p>10 targeted at anyone, that part of the differential in 06:30:13</p> <p>11 the click-through rate would be explained by the</p> <p>12 homophily effect and not by the endorsement in the</p> <p>13 sponsored story?</p> <p>14 MR. ARNS: It assumes facts. It's vague.</p> <p>15 BY MR. GUTKIN: 06:30:28</p> <p>16 Q Do you agree with that?</p> <p>17 A I think it's incomplete in -- the</p> <p>18 comparison there is not sufficient to draw that</p> <p>19 conclusion because how would you have a comparable</p> <p>20 ad just to test the homophily effect if it's not a 06:30:47</p> <p>21 friend-endorsed ad?</p> <p>22 Q Well, let me ask you, do the --</p> <p>23 In order for your comparison to be</p> <p>24 reasonable and, in your view, to isolate of the</p> <p>25 value of the friend endorsement, is it necessary 06:31:06</p> <p style="text-align: right;">Page 249</p>

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<p>1 that the standard ads be limited to those that are 06:31:09 2 targeted to the friends of people who have "Liked" 3 the advertiser's content? 4 A I wouldn't agree that that is the general 5 case. The comparability could still be proper in 06:31:30 6 the sense of using a control that is targeted at a 7 wider audience. 8 Q Well, how -- if you used a control 9 targeted at a wider audience, how would you separate 10 out the homophily effect from the CTR differential 06:31:51 11 you measure? 12 A Well, in my opinion, the homophily effect 13 is an underlying characteristic of the social 14 network. It's not the cause. It's an underlying 15 characteristic. It can be interpreted as the 06:32:13 16 reason why sponsored story ads would work better. 17 But sponsored story ads are distinct in that they 18 have a friend endorsement that is made explicit. 19 So the control may have -- in principle, would have 20 to be a comparable ad, otherwise, except that it 06:32:37 21 does not have the friend endorsement. 22 Q Well, that was the previous question. 23 In order for -- in your view as an 24 economist, in order for the comparison to be 25 reasonable and to isolate the value of the friend 06:32:53 Page 250</p>	<p>1 campaign or even industry, that the homophily effect 06:34:24 2 explains the entirety of the differential. 3 Do you agree with that? 4 A I don't think that would be an 5 explanation, and it wouldn't be 100 percent of an 06:34:40 6 explanation. 7 Q It's your intuition that it would not be 8 100 percent, but you don't know how much it is, 9 correct? 10 A I don't even agree that isolating the -- 06:34:54 11 trying to isolate the effect of homophily in that 12 comparison would be the proper method. 13 Q That's fine. 14 I'm not asking you to agree with my 15 approach. I'm just clarifying. 06:35:06 16 Your methodology does not separate the 17 homophily effect from the endorsement value in 18 looking at that click-through rate differential? 19 MR. OSBORNE: Assumes facts. 20 BY MR. GUTKIN: 06:35:26 21 Q I'm clarifying that your method does not 22 separate those two things? 23 A The method does not separate the effects 24 of two things that are not in the same plane of 25 abstraction. So the homophily is one 06:35:38 Page 252</p>
<p>1 endorsement, would the control have to be targeted 06:32:55 2 only to the friends who have -- sorry -- the friends 3 of users who have connected with the advertiser's 4 content in order to exclude the homophily effect 5 from the data? 06:33:11 6 MR. OSBORNE: Assumes facts. 7 THE WITNESS: It wouldn't have to be 8 limited, unless testing for the homophily effect was 9 the sole objective. It's not the only reason why 10 sponsored story ads are expected to work. There are 06:33:25 11 other effects. So in my methodology, my 12 declaration, I'm not talking -- that methodology 13 does not set that standard ad as a standard ad to 14 test or control for homophily. 15 BY MR. GUTKIN: 06:33:45 16 Q I appreciate that. 17 So your -- your methodology does not allow 18 you to measure the importance of the homophily 19 effect on the differential between the sponsored 20 story CTR and the comparison ad CTR, correct? 06:33:57 21 A It's not designed to isolate one of the 22 factors behind the effectiveness of sponsored story 23 ads. That's not -- that's not what it's doing. 24 Q Okay. 25 And it's possible in, for any given 06:34:20 Page 251</p>	<p>1 characteristic underlying the effectiveness of 06:35:44 2 friend endorsement. So it's -- it's like saying -- 3 to put it simply in another hypothetical, a boxing 4 match does not compare the abilities of one boxer, 5 or does not rule out the comparison of the 06:36:11 6 abilities of one boxer, to the race of both boxers. 7 It's not the same thing, so race has nothing to do 8 with abilities, but abilities can be associated 9 with race. 10 Q Let me try and come at it from another 06:36:30 11 direction. 12 If you performed your F calculation for 13 the automobile industry and found a zero -- sorry -- 14 .02 differential between the sponsored stories in 15 the automobile industry and whatever comparison ad 06:36:47 16 you chose, you would not be able to say how much of 17 that .02 differential is attributable to homophily, 18 correct? 19 MR. OSBORNE: Incomplete hypothetical. 20 THE WITNESS: The only way to draw that 06:37:05 21 conclusion is if those two comparisons, the only 22 difference between the two, would be a network of 23 friends that do not exhibit homophily and a network 24 of friends that do. 25 Page 253</p>

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<p>1 articles, those are not online advertising agencies, 07:04:53 2 right? 3 As to online advertising agencies, there 4 is only the two examples you found? 5 A I have materials from those -- from two 07:05:02 6 advertising agencies. And there is also a more 7 general analysis that I also found, but I didn't 8 cite that one in particular. 9 Q The more general analysis is not for 10 online advertising agencies; it's for people like 07:05:16 11 Nielsen and that sort of thing? 12 A No, it's another one that I didn't have 13 time to properly include because it was a very 14 complicated diagramming of the whole online 15 advertising industry. 07:05:33 16 Q What's the -- what was the -- 17 Can you describe that? Is it from a 18 company that put out that analysis? 19 A Some company that has an analytics 20 software package. 07:05:46 21 Q Do you know the name of it? 22 A I don't recall the name right now. 23 Q Did you find it by Googling, or how did 24 you find it? 25 A Yes, a lot of the research that I did was 07:05:54</p> <p style="text-align: right;">Page 274</p>	<p>1 want to make sure I understand. 07:07:38 2 Is it anything different than just actual 3 revenue times 1 minus F for calculating the damages 4 for cost-per-impression sponsored stories? 5 A If we have the actual revenue number, 07:07:48 6 then that's -- that's fine. 7 Q Otherwise, it would be like the 8 cost-per-impression price, times the number of 9 impressions. Is that what you mean? 10 A Correct. 07:08:03 11 MR. GUTKIN: Okay. Why don't we go off 12 the record. 13 THE VIDEOGRAPHER: The time is 7:08, and 14 we're going off the record. 15 This concludes today's testimony given by 07:08:25 16 Fernando Torres -- 17 MR. GUTKIN: I apologize. I meant go off 18 the record so I can look at my notes. 19 THE VIDEOGRAPHER: I'm sorry. 20 We'll just go off the record then. This 07:08:35 21 does not conclude testimony for the day. The time 22 is 7:08. 23 (Brief pause in proceedings.) 24 THE VIDEOGRAPHER: The time is 7:11, and 25 we are back on the record. 07:11:47</p> <p style="text-align: right;">Page 276</p>
<p>1 through Google. 07:05:57 2 Q Okay. 3 [REDACTED] 4 [REDACTED] 5 [REDACTED] 07:06:24 6 [REDACTED] 7 [REDACTED] 8 [REDACTED] 9 [REDACTED] 10 [REDACTED] 07:06:34 11 [REDACTED] 12 [REDACTED] 13 [REDACTED] 14 Q Okay. 15 Are you planning to use your methodology 07:06:51 16 and the actual revenue times 1 minus F to compute 17 damages for cost-per-impression sponsored stories? 18 A Yes, I anticipate that the proper 19 conversion would be documented and included in the 20 calculation. 07:07:19 21 Q So you would use the same methodology for 22 cost-per-impression sponsored stories? 23 A Adjusting the inputs for -- you know, in 24 the proper way, yes. 25 Q What adjustment would you make? I just 07:07:36</p> <p style="text-align: right;">Page 275</p>	<p>1 MR. GUTKIN: And I have no further 07:11:49 2 questions, subject to any questions your counsel 3 might have. 4 MR. OSBORNE: I have no questions. 5 THE VIDEOGRAPHER: The time is 7:12, and 07:11:57 6 we are off the record. This concludes today's 7 testimony given by Fernando Torres. 8 The total number of media used was six and 9 will be retained by Veritext, LLC. 10 (Time noted: 7:12 p.m.) 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25</p> <p style="text-align: right;">Page 277</p>

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<p>1 STATE OF CALIFORNIA) 2) :ss 3 COUNTY OF SAN FRANCISCO) 4 5 I, KELLI COMBS, CSR NO. 7705, a Certified Shorthand 6 Reporter of the State of California, do hereby certify: 7 That the foregoing proceedings were taken before me 8 at the time and place herein set forth; that any 9 witnesses in the foregoing proceedings, prior to 10 testifying, were placed under oath; that the verbatim 11 record of the proceedings was made by me using machine 12 shorthand which was thereafter transcribed under my 13 direction; further, that the foregoing is an accurate 14 transcription thereof. 15 I further certify that I am neither financially 16 interested in the action nor a relative or employee of 17 any attorney of any of the parties. 18 IN WITNESS WHEREOF, I have this date subscribed my 19 name. 20 Dated: 4/12/12 21 22 23 24 KELLI COMBS, CSR NO. 7705 25</p> <p style="text-align: right;">Page 278</p>	<p>1 INDEX 2 EXHIBITS FOR IDENTIFICATION 3 DEFENDANTS' PAGE 4 Exhibit 1065 Online NielsenWire 9 produced by Mr. Torres 5 6 Exhibit 1066 CV of Fernando Torres 11 7 8 Exhibit 1067 Declaration of Fernando 48 Torres 9 Exhibit 1068 Plaintiffs' Statement of 50 Facts 10 11 Exhibit 1069 A Facebook document that 83 at the top says "The Metropolitan Opera" 12 13 Exhibit 1070 Document used by 164 Mr. Torres to create the Nike campaign analysis, Bates Number FB_FRA_000002748 through -751 14 15 16 17 PREVIOUSLY MARKED EXHIBIT 18 EXHIBIT PAGE 19 583 218 20 21 22 * * * * 23 24 25</p> <p style="text-align: right;">Page 280</p>
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